

Nutrition 2005

The Quest for Immortality (or you are what you eat)

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With apologies to Dr. Dave Richmond



Topics of Discussion

- Fats and things
- Diets
- Living Forever (Why not?)



USDA Recommended Caloric Intake

		Activity Level		
Gender	Age (years)	Sedentary	Moderately Active	Active
Child	2-3	1,000	1,000-1,400	1,000-1,400
Female	4-8	1,200	1,400-1,600	1,400
	9-13	1,600	1,600-2,000	1,800
	14-18	1,800	2,000	1,800-
	19-30	2,000	2,000-2,200	2,200
	31-50	1,800	2,000	2,400
	51+	1,600	1,800	2,400
Male	4-8	1,400	1,400-1,600	1,600
	9-13	1,800	1,800-2,200	2,000
	14-18	2,200	2,400-2,800	2,600
	19-30	2,400	2,600-2,800	2,600
	31-50	2,200	2,400-2,600	2,800-
	51+	2,000	2,200-2,400	3,200

3,000
2,800



USDA Components

- 18% Kcal from protein (90 gms)*
- 54% Kcal from carbohydrates (270 gms)*
- 28% Kcal from fats (65 gms)*
 - ◆ Sat fat 8%
 - ◆ Monounsaturated fat 11%
 - ◆ Polyunsaturated fat 9%

*based on 2000 Kcal diet



Metabolic Effects of Fatty Acids

- “Percent fat in diet is not enough, the type of fat is as important as the amount”
 - ◆ Saturated Fats (raise triglycerides, total cholesterol)
 - ◆ Monounsaturated Fats (lower LDL)
 - ◆ Polyunsaturated Fats (lower lower Tchol, LDL, Trig)
 - ◆ Trans-Fats



TRANS-Fats

- Which of the following are true:
- A. increased use of mass transit raises these fat levels
- Trans-fats are formed by high temperature cooking
- Trans-fats raise LDL and lower HDL
- On a per-Gm basis, trans fats are worse than saturated fats



TRANS-Fats

- Formed when hydrogenating oils
- on a per-Gm basis, increase LDL and lower HDL more than Sat-fats
- NEJM study, 36 Hi-cholesterol patients, LDL lowest on soybean oil; butter and stick margarine increase LDL and lower HDL
- Baked goods, commercial fries



Commercial Fries

	<i>trans</i>	<i>sat</i>	<i>bad</i>
<i>fats</i>			
■ McDonald's:	5.0	5.0	
	10.0		
■ Burger King:	6.5	4.5	
	11.0		
■ Wendys:	4.5	3.0	
	7.5		



Cholesterol (230 mg/day)*

- Which of these statements are true?
- A. dietary changes constitute first line Rx for elevated cholesterol
- B. patients who will do well with diet Rx can be identified in 6 weeks
- C. Soy protein can lower cholesterol



Cholesterol

- Israeli study, 136 Hi-cholesterol patients
- success: age <55, cholesterol >170, eating more fat, less overweight
- can predict success @ 6 weeks
- lean patients, 8.2% decrease LDL



Fats - Nuts

- Which of the following are true:
- A. regular consumption of nuts increases heart disease
- B. regular consumption of nuts raises cholesterol
- C. most nuts are rich sources of monounsaturated fatty acids



Nuts

- Which of the following nuts have favorable effects on plasma lipids
- A. almonds
- B. walnuts
- C. macadamia nuts
- D. filberts
- E. Flag Officers



Nuts (Monounsaturated fats)

- Study of 30 pts, 3 diets: usual American, AHA step 1, macadamia nut-based. Latter two lower cholesterol, nuts lower triglycerides
- almonds and walnuts similar effects
- Epi studies associate nuts and lower CV mortality



NUTS: Harvard Study

- Hi Vs Lo Fat Wgt loss diet
- Hi Fat: high Unsat Fats
- Nuts, peanut butter
- Hi Fat: better loss, adherence
- “Healthy Adkins Diet”



NUTS

- “Eat a handful...
not a canful”
- (Colleen Pierce, Balto Dietician)



Beans, beans... really are good for the heart!

- Prospective study of 9632 men & women
- legumes 4 or >/week,
Relative Risk of CHD = 0.78
- legumes can lower cholesterol



FISH

- Which of the following are true?
- A. Regular fish eating is associated with lower sudden death
- B. Post-MI patients have lower mortality if they eat fish twice a week
- C. In post-MI patients fish oil adds benefit to ASA, cholesterol lowering drugs



FISH

- DART study, fish twice a week post-MI, 29% drop mortality
- GISSI trial, usual care Vs n-3 FAs, drop in total mortality, additive
- US Physicians Health Study >1 serving of Fish/week, 52% decrease in sudden cardiac death
- Fish in wt loss diet = lower glucose, insulin, better lipids
- 4 x 3 oz servings oily fish/wk, e.g. salmon, herring, mackerel, tuna



Fish Oil Study

- 11,323 post MI pts
- 1 Gm n-3 fatty acid (3 Gm Fish Oils)
- supplement Vs placebo
- 41% drop in sudden death
- Circulation, NEJM & JAMA



Foods Hi in n-3's

- **Fish**(mostly EPA and DHA)
 - ◆ mackerel, cod, halibut, herring
 - ◆ albacore tuna, rainbow trout
 - ◆ Coho & Chinook salmon
- **Plants** (mostly ALA)
 - ◆ flaxseed, walnuts, almonds
 - ◆ wheat germ, pinto & soybeans



Omega 3 Guidelines

- Anti-arrhythmic, anti-thrombotic
- Lower plaque growth, BP
- Anti-inflammatory
- EAT: fish **twice** a week
- EAT oils/foods Hi ALA
- Hi TGs: 2-4 Gm EPA-DHA/day



Select true statements about diet and lipids

- A. Trading carbs for sat fats may raise triglycerides, lower HDL
- B. Trading almonds, walnuts, or macadamia nuts for sat-fats raises HDL/ lowers LDL
- C. Trading mono fats for sat fats raises HDL/lowers LDL
- D. Poor control of diabetes and hi alcohol intake raise triglycerides



Alzheimer's & Fats

- Risk rises with Hi Sat Fats
- “What is good for the heart is good for the head”
- (Bill Thies, Alzheimer's Assoc, Washington Post)



Good dietary changes for diabetics include:

- A. replacement of Sat-Fats with carbohydrates
- B. replacement of Sat-Fats with monounsaturated fats
- C. increase in dietary fiber to lower cholesterol
- D. Increase in dietary fiber to lower post prandial glucose



Hi-Fiber Diet & Diabetes

- NEJM study type 2 diabetics
- ADA diet Vs Hi-Fiber diet
- 55% carbs, 15% protein, 30% fats
- insulin drops 12%, glucose 10%
- cholesterol drops 6.7%, LDL 6.3%, triglycerides 10.2%



Fiber in Foods

- Hi-Soluble fiber foods include:
- A. Oats
- B. Fruits
- C. Legumes
- D. Your Syllabus



Fiber & Colon Cancer

- 2 studies, Lancet
- 34,000 pts, Ca screening, risk of Ca inverse to fiber intake
- 500,000 pts, EPIC study, dose related protection, both sides of colon, male and female



Fiber & Weight Loss

- 12 year study
- Women increased fiber by 8 Gm/day, ate 150Kcal less/day
- Those w/highest fiber intake weighed 8# less, vs 20# gain



Soy

- Select the true statements:
- A. Soy products can be labeled capable of lowering cholesterol
- B. FDA says: “25 Gm soy protein, as part of diet low in sat fat and cholesterol, may reduce heart disease risk”
- C. Isoflavones are a major type of plant-derived estrogen



Soy

- Supplement trial: 20 Gm complex carbs, 20 Gm soy protein q day or BID
- cholesterol/LDL decreased 6/7.5%
- lower diastolic BP w/BID soy
- decreased hot flushes w/BID soy



Soy Isoflavones

- Weak estrogen, occupy receptors
- 100 mgm isoflavones/day safe
- about 3 servings/soy (tofu, soy protein)
- NAMS: isoflavones, or other soy components. Recommend soy foods, not supplements
- soy protein lowers cholesterol



Modest Alcohol Intake:

- Select the correct responses:
- A. increases HDL
- B. increases platelet aggregation
- C. increases fibrinogen levels
- D. is associated with greater longevity than abstinence or heavy drinking



Alcohol

- NIH data, 1226 men and women
- cross-section epi study
- HDL increases with
 - ◆ 1 drink/day = 25%
 - ◆ exercise, 60+ min/day = 6%
 - ◆ smoking = - 17%



Alcohol & post-MI Survival

- Death rates: abstainers = 22%, light drinkers = 13%, moderate drinkers = 9%
- Similar for men, women, smokers, nonsmokers, diabetics, normo and hypertensives
- Beer, wine, liquor similar



ALCOHOL & COLDS

- Spanish Study
- 2 drinks/day, red wine
- decreased colds
- RR 0.56
- Not w/beer or spirits



Alcohol, But...

- alcohol above ~1drink/day linked to increased breast cancer risk in women
- above 2 drinks a day linked to other cancers in men and women
- heavy drinking increases hypertension and worsens CV prognosis



Diets you should know...

- The Adkins' Diet – 2 week induction at no more than 20 gms of carbohydrates a day then add 5 gms a week to total of 90 -> 10 lbs
- Sugar Busters – Glycemic Index (the area under the curve of increase in blood sugar over time until back to baseline) > 70 considered high usually sugar, potatoes, white bread- > lower trig, higher HDL, decreased GERD



Diets you should know...

- South Beach – Adkins light with elements of Sugar Busters-3 phases
- Zone Diet – 40% carb, 30% fat, 30% protein-return to nature
- Mediterranean Diet – high in monounsaturated fats



Mediterranean Diet

- 25,000 Greeks
- Diet Compliance Scale, 0-9
- For each 2 point rise
 - ◆ 25% less all cause death
 - ◆ 33% less CAD
 - ◆ 24% less Ca



Mediterranean Diet

- Mono and Sat fat related to drop in mortality
- Highest benefit:
 - ◆ Women
 - ◆ Age >55
 - ◆ Never smokers
 - ◆ Overweight, sedentary



Immortality.....

- Bioactive compounds in foods
- Components of healthy diets in various cultures
 - ◆ Fruits and vegetables RR 0.8 CV, 0.75 CA
 - ◆ Legumes
 - ◆ Whole grains
 - ◆ Fish
- Results are high in fiber, omega-3 fatty acids and low in saturated fat, trans fat and cholesterol



Bioactive compounds

- Flavonoids
- Phytoestrogens
- Organosulfur compounds
- Soluble fiber
- Isothiocyanates
- Monoterpenes
- Plant Sterols
- Olive Oil

Kris-Etherton et al, *Bioactive Compounds in Foods: Their role in the Prevention of Cardiovascular Disease and Cancer*, AJM, Vol 112, 2002



Ten Diet Commandments

- **1** Eat multigrain bread daily
- **2** Eat fruit twice a day
- **3** Do not use cream/butter
- **4** Eat more fish/less meat
- **5** Use olive oil



10 Diet Commandments

- **6** Eat daily variety of vegetables
- **7** Have a handful of nuts daily
- **8** Use more garlic/fresh herbs
- **9** Drink a glass of wine per day
- **10** Eat in pleasant/relaxed atmosphere